

Population-level interventions for the primary prevention of dementia: a complex evidence review

Dr Sebastian Walsh (MPhil)¹, Dr Lindsay Wallace (PhD)¹, Isla Kuhn (MSc)², Dr Oliver Mytton (PhD)³, Dr Louise Lafortune (PhD)¹, Prof Wendy Wills⁴, Dr Naaheed Mukadam (PhD)^{5*}, Prof Carol Brayne^{1*}

*Joint last authors

Author affiliations

¹Cambridge Public Health, University of Cambridge, Cambridge, CB2 0SR, UK

²University of Cambridge Medical School Library, School of Clinical Medicine, Cambridge, CB2 0SP, UK

³Great Ormond Street Institute of Child Health, University College London, London, WC1N 1EH, UK

⁴Centre for Research in Public Health and Community Care, University of Hertfordshire, Hatfield, AL10 9AB, UK

⁵Division of Psychiatry, University College London, Maple House, London, W1T 7BN, UK

Corresponding author

Dr Sebastian Walsh (MBChB, MPhil)

Sjw261@medschl.cam.ac.uk

Cambridge Public Health, Forvie Site, Robinson Way, Cambridge, CB2 0SR, UK

Tel: 01223 330 300

Presenting author

Dr Sebastian Walsh

ECR - PhD researcher at Cambridge Public Health, through an NIHR Doctoral Fellowship

Contributors

All authors designed the study. The searches were designed with support from an expert medical librarian, IK. SW, LW, and NM performed the study selection, data extraction, narrative synthesis, and grading of evidence quality. SW drafted the abstract. All authors have seen and approved the final version of the Abstract for publication

Conflicts of interest

We declare we have no conflicts of interest

Word count

346 words

Funding

SW is a PhD student, funded by a National Institute for Health and Care Research (NIHR) Doctoral Fellowship. WW and LL are supported by the NIHR Applied Research Collaboration East of England (NIHR ARC EoE) at Cambridgeshire and Peterborough NHS Foundation Trust. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care. The funders played no role in the design, conduct, or reporting of this study.

Abstract

Background

Dementia is a leading, global public health challenge. Recent evidence supporting falls in age-specific incidence in high income countries (HICs) has suggested that dementia risk reduction is possible through improved lifecourse public health. Despite this, efforts to date have been heavily focused on individual-level approaches, which are unlikely to significantly reduce dementia prevalence or inequalities in dementia. We identified the population-level interventions for dementia risk reduction with the strongest evidence base – in order to inform policy.

Methods

This complex, multi-stage, evidence review, registered on Prospero (ID:CRD42023396193), summarised the empirical, interventional evidence for population-level interventions to reduce or control each of the 12 modifiable lifecourse risk factors for dementia, identified by the Lancet commission. We conducted a series of structured searches of peer-reviewed and grey literature databases, including Medline, Trip database, Cochrane library, Campbell Collaboration, the World Health Organization, and Google Scholar, in January, March, and June, 2023. Search terms related to risk factors, prevention, and/or population-level interventions, without language restrictions. We extracted evidence of effectiveness, and key contextual information to aid consideration and implementation of interventions by policymakers. We performed a narrative synthesis and evidence grading, and derived a population-level dementia risk reduction intervention framework, structured by intervention type.

Findings

We identified clear and consistent evidence for the effectiveness of 27 population-level interventions to reduce the prevalence of nine of the risk factors, of which 24 have been empirically evaluated in HICs, and 16 in low/middle income countries. We identify interventions which act through fiscal (n=6) (e.g. removing primary school fees), marketing/advertising (n=5) (e.g. plain packaging of tobacco products), availability (n=8) (e.g. cleaner fuel replacement programmes for cooking stoves), and legislative (n=8) (e.g. mandated provision of hearing protective equipment at noisy workplaces) levers. We were not able to recommend any interventions for diabetes (other than indirectly through action on obesity and physical inactivity), depression, or social isolation.

Interpretation

This complex evidence review provides policymakers and public health professionals with an evidence-based framework to help develop and implement population-level dementia risk reduction approaches that could significantly reduce the population's risk of dementia, and reduce health inequalities.